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Applicant	:	Khiem Le	Conf. No.	:	5064
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Title	:	OPTIMIZING THE COMPRESSION EFFICIENCY IN A PACKET DATA COMMUNICATION			

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RESPONSE TO FINAL OFFICE ACTION MAILED JUNE 8, 2010

This reply is responsive to the Final Office Action mailed on June 8, 2010 in the above-referenced matter. Applicant files herewith a Request for Continued Examination. Reconsideration and allowance of the application is requested in view of the amendments and remarks contained in the following pages:

Amendments to the Claims begin on page 2 of this paper.

Remarks begin on page 10 of this paper.

CERTIFICATE OF ELECTRONIC TRANSMISSION

I hereby certify that this correspondence is being electronically transmitted to the Patent and Trademark Office on the date indicated below in accordance with 37 CFR 1.8(a)(1)(i)(C).

September 8, 2010
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Amendments To The Claims:

The following listing of claims replaces all prior listings of claims:

Listing of Claims:

1. (Currently Amended) A method, comprising:

selectively updating a compression history at a compressor based on a first algorithm and a second algorithm, wherein the first algorithm is configured to determine whether a payload of a packet is to be compressed, and ~~based on a~~ the second algorithm is configured to determine whether the compressed packet is to be used for the updating of the compression history, the compression history used for compression of another payload of a subsequent packet.

2. (Currently Amended Presented) A method, comprising:

selectively updating, at a compressor implemented at a serving node of a cellular network, a compression history based on a first algorithm and a second algorithm, wherein the first algorithm is configured to determine, based on a compressibility of a packet, whether a payload of the packet is to be compressed before being transmitted via a transmission control protocol to a mobile station, and the second algorithm is configured to determine whether the packet, when compressed, is used for the updating of the compression history, the compression history used to compress another payload of a subsequent packet,

~~The method according to claim 1, wherein the packet and the subsequent packet are transmitted via a transmission control protocol, and wherein claim 1 further comprises :~~

~~ensuring a history consistency between a compressor and a decompressor by using transmission control protocol,~~ wherein the compressor monitors an acknowledgment signaling of a transmission control protocol receiver at the mobile station.

3. (Original) The method according to claim 1, further comprising:

ensuring a history consistency between a compressor and a decompressor by using a feedback between the compressor and the decompressor.

4. (Previously Presented) The method according to claim 2, further comprising:

enabling the compressor to safely infer a subset of a first context at the decompressor by monitoring the transmission control protocol acknowledgment signaling, wherein the subset is used as a second context for compression.

5. (Previously Presented) The method according to claim 1, further comprising:

ensuring a history consistency between a compressor and a decompressor by combining use of transmission control protocol, wherein the compressor monitors an acknowledgment signaling of a transmission control protocol receiver, with use of a feedback between the compressor and the decompressor.

6. (Previously Presented) A method, comprising:

using a first algorithm in conjunction with a compressing device to decide if a current payload of a packet should be compressed;

using a second algorithm in conjunction with the compressing device to decide which packets out of packets sent compressed are to be used to update a buffer of the compressing device; and

signaling from the compressing device to a decompressing device such that the decompressing device knows which of the packets out of the packets sent are to be included in a compression history.

7. (Previously Presented) The method according to claim 6, further comprising:

ensuring a history consistency between the compressing device and a decompressing device by using transmission control protocol, wherein the compressing device monitors an acknowledgment signaling of a transmission control protocol receiver.

8. (Previously Presented) The method according to claim 7, further comprising:

enabling the compressing device to safely infer a subset of a first context at the decompressing device by monitoring the transmission control protocol acknowledgment signaling, wherein the subset is used as a second context for compression.

9. (Original) The method according to claim 6, further comprising:

ensuring a history consistency between the compressing device and the decompressing device by using a feedback between the compressing device and the decompressing device.

10. (Previously Presented) the method according to claim 6, further comprising:

ensuring a history consistency between the compressing device and a decompressing device by combining use of transmission control protocol, wherein the compressing device monitors an acknowledgment signaling of a transmission control protocol receiver, with use of a feedback between the compressing device and the decompressing device.

11. (Previously Presented) An apparatus, comprising:

a processor configured to update a compression history selectively, the processor having implemented and being configured to process a first algorithm related to whether a payload of a packet is to be compressed, and a second algorithm related to whether the compressed packet is to be used for an update of the compression history.

12. (Previously Presented) The apparatus according to claim 11, further comprising:

a monitor configured to monitor an acknowledgment signaling of a transmission control protocol receiver, wherein the monitor is operably connected to the processor.

13. (Previously Presented) The apparatus according to claim 12, wherein said monitor is configured to be enabled to safely infer a subset of a first context at a decompressor by monitoring transmission control protocol acknowledgment signaling, wherein the subset is used as a second context for compression.

14. (Previously Presented) The apparatus according to claim 11, further comprising:

an establisher configured to establish a feedback between the compression device and a decompression device, wherein the establisher is operably connected to the processor.

15. (Previously Presented) An apparatus, comprising:

a transmitter configured to signal to a decompression device which of a first set of packets are to be included in a compression history, the transmitter having implemented and processing a first algorithm used to decide if a current payload of a packet should be compressed; and

a processor configured to have implemented and to process a second algorithm, wherein the second algorithm is used to determine which of a second set of packets out of a third set of packets sent compressed are to be used to update a buffer, wherein the processor is operably connected to the transmitter.

16. (Previously Presented) The apparatus according to claim 15, further comprising:

a monitor configured to monitor an acknowledgment signaling of a transmission control protocol receiver, wherein the monitor is operably connected to the transmitter.

17. (Previously Presented) The apparatus according to claim 16, wherein the monitor is configured to be enabled to safely infer a subset of a first context at a decompressor by monitoring a transmission control protocol acknowledgment signaling, wherein the subset is used as a second context for compression.

18. (Previously Presented) The apparatus according to claim 15, further comprising:

an establishing unit configured to establish a feedback between the compression device and a decompression device, wherein the establishing unit is operably connected to the transmitter.

19. (Previously Presented) An apparatus, comprising:

a receiver configured to receive signals from a compression device indicating which packets are to be included in a compression history, the compression history including one or more packets selected based on a first algorithm configured to determine whether at least one of the payloads of the packets are to be compressed and based on a second algorithm configured to determine whether the compressed packets are included in the compression history; and

a processor configured to process a packet sequence number for updating a buffer in synchronization with the compression device, wherein the processor is operably connected to the receiver.

20. (Previously Presented) The apparatus according to claim 19, further comprising:

a forwarding unit configured to forward an acknowledgment signaling of a transmission control protocol receiver to the compression device, wherein the forwarding unit is operably connected to the receiver.

21. (Previously Presented) The apparatus according to claim 19, further comprising:

an establishing unit configured to establish a feedback between the compression device and the decompression device, wherein the establishing means is operably connected to the receiver.

22. (Previously Presented) An apparatus, comprising:

updating means for updating a compression history selectively, the updating means for implementing and processing a first algorithm related to whether a payload of a packet shall be compressed, and a second algorithm related to whether a compressed packet shall be used for an update of the compression history; and

monitoring means operably connected to the updating means for monitoring an acknowledgment signaling.

23. (Previously Presented) An apparatus, comprising:

signaling means for signaling a decompression device which of a first set of packets are to be included in the compression history, the signaling means having implemented and

processing a first algorithm used to decide if a current payload of a packet should be compressed; and

processing means for having implementing and processing a second algorithm, wherein the second algorithm is used to determine which of a second set of packets out of a third set of packets sent compressed are to be used to update the buffer, wherein processor is operably connected to the means for signaling.

24. (Previously Presented) An apparatus, comprising:

receiving means for receiving signals from a compression device indicating which packets are to be included in a compression history; and

processing means for processing a packet sequence number for updating the buffer in synchronization with the compression device, wherein the processor is operably connected to the receiving means.

25. (Currently Amended) A computer program, embodied on a non-transitory computer-readable medium, the computer program configured to control a processor to perform a method comprising:

selectively updating a compression history at a compressor based on a first algorithm configured to determine whether a packet is to be compressed, and based on a second algorithm configured to determine whether the compressed packet is to be used for the updating of the compression history.

26. (Currently Amended) A computer program, embodied on a non-transitory computer-readable medium, the computer program configured to control a processor to perform a method comprising:

using a first algorithm in conjunction with a compressing device to decide if a current payload of a packet should be compressed;

using a second algorithm in conjunction with the compressing device to decide which packets out of packets sent compressed are to be used to update a buffer of the compressing device; and

signaling from the compressing device to a decompressing device such that the decompressing device knows which of the packets out of the packets sent are to be included in a compression history.

REMARKS

Claims 1-26 are pending.

Claims 1 and 2 have been amended to improve form and claims 25 and 26 have been amended to direct those claims to statutory subject matter.

The Examiner rejected claims 25 and 26 under 35 U.S.C. §101 for being directed to non-statutory subject matter; and rejected claims 1-26 under 35 U.S.C. §103(a) as unpatentable over U.S. Patent No. 6,970,476 to Jonsson et al. (Jonsson) in view of U.S. Patent Application Publication No. 2003/0012278 to Banerji et al. (Banerji), U.S. Patent No. 6,151,627 to McBride et al. (McBride), and U.S. Patent No. 6,236,341 to Dorward et al. (Dorward).

Regarding the rejection under 35 U.S.C. §101, Applicant submit that the amendments to claims 25 and 26 (adding "non-transitory") obviate the basis of the rejection under 35 U.S.C. §101. Therefore, the rejection under 35 U.S.C. §101 of claims 25 and 26 should be withdrawn.

Rejection under 35 U.S.C. §103(a)

The Examiner rejected claims 1-26 under 35 U.S.C. §103(a) as unpatentable over Jonsson in view of Banerji, McBride, and Dorward. Applicant respectfully traverses this rejection.

The key consideration in a proper rejection under 35 U.S.C. 103(a) is not whether the pending claims can be used as a "shopping list" for searching of the prior art for descriptions of features for assembly in a manner that is allegedly similar to the claimed subject matter, but rather whether the prior art references, each taken in their entirety for all that they would reasonably teach to one of ordinary skill in the art at the time of the instant invention, would have rendered the instantly claimed subject matter unpatentably obvious. Unfortunately, the rejections proffered by the Office in this matter have emphasized the first approach in

assembling piecemeal elements from several references to create an alleged basis for prima facie obviousness while failing to properly consider whether the cited references, when taken as a whole, properly suggest the instantly claimed subject matter in a manner that would have caused one of ordinary skill in the art a the time of the present invention to have deemed it obvious.

Claim 1 recites the following features:

> selectively updating a compression history at a compressor based on a first algorithm and a second algorithm, wherein the first algorithm is configured to determine whether a payload of a packet is to be compressed, and the second algorithm is configured to determine whether the compressed packet is to be used for the updating of the compression history, the compression history used for compression of another payload of a subsequent packet.

In some implementations consistent with claim 1, a compression history (which is used to compress the payload of packets transmitted via TCP) is selectively updated based on a first algorithm and a second algorithm. The first algorithm determines whether a payload of a packet is to be compressed (e.g., based on one or more considerations, such as the compressibility of the packet, central processing unit limitations, and memory limitations). The second algorithm then determines whether the compression history should be updated with the compressed packet. For example, the size limitations of buffer memory (which includes the compression history) may result in situations in which the compression history should not be updated with the compressed packet. In these instances, the first and second algorithms enable a determination of which compressed packets should be included in the compression history, which may thus provide a more flexible usage of buffer memory. *See*, e.g., instant specification at paragraph 0031.

Jonsson describes a packet transmitting station transmitting packets with compressed headers to a packet receiving station. The compressed headers are decompressed by a header decompressor at the packet receiving station. If the packet with the compressed header does not

reach the packet receiving station within a predetermined amount of time, a request for context update is generated. A context update takes place in response to the request.

The Examiner appears to allege on page 4 of the Office Action that Jonsson's context update constitutes the "updating a compression history" recited in claim 1. Applicant disagrees for at least the reason that follows. Jonsson relates to header compression rather than payload compression. A header may contain information about a payload, but the header is not the payload. It would thus be a ***clear error*** to equate Jonsson's header compression as constituting payload compression.[1] Therefore, Jonsson's context update cannot possibly constitute "updating a compression history," as recited in claim 1.

Further, the Examiner appears to allege on page 4 of the Office Action that Jonsson's process of the context update constitutes updating a compression history based on an algorithm configured to determine whether a payload of a packet is to be compressed, as recited in claim 1. Applicant disagrees for at least the reason that Jonsson's context update is not "updating a compression history." Therefore, Jonsson's context update process cannot possibly constitute updating a compression history based on an algorithm configured to determine whether a payload of a packet is to be compressed. Therefore, Jonsson does not disclose the "first algorithm configured to determine whether a payload of a packet is to be compressed," as recited in claim 1.

[1] *In re Suitco Surface, Inc.* (Fed. Cir. 2010) (finding that that the PTO's practice of giving a claim the broadest, reasonable construction "does not give the PTO an unfettered license to interpret claims to embrace anything remotely related to the claimed invention. Rather, claims should always be read in light of the specification and teachings in the underlying patent)."

The Examiner acknowledges on page 4 of the Office Action that Jonsson fails to disclose or suggest the "second algorithm" recited in claim 1. To cure this deficiency of Jonsson, the Examiner relies on Banerji.

But instead of what the Examiner alleges Banerji instead describes compressing motion vectors for each frame of a video sequence. The motion vectors of the frames of the video sequence are stored in files corresponding to motion (e.g. vertical motion and horizontal motion) represented by the motion vectors. These files are compressed separately using a compression algorithm. The compression algorithm for the compression of the motion vectors takes into account the resemblance of similar regions between a current frame and previous frames of the video sequence. The resemblance is accounted for by exploiting repetitiveness of motion vectors representing the similar regions. Information regarding the similar regions and indicating the resemblance is called data history, which is located in beginning of the files. *See* Banerji at paragraphs 9-11. But rather than disclose the "second algorithm" recited in claim 1, Banerji merely discloses a compression algorithm used for compressing motion vectors related to a video sequence, not determining whether an already "compressed packet is to be used for the updating of the compression history," as recited in claim 1. Indeed, it would be a ***clear error***[2] to equate compressing uncompressed motion vectors using a data history to determining whether a particular compressed packet is used for updating a compression history. Therefore, Banerji's compression algorithm cannot possibly constitute the "second algorithm" recited in claim 1.

Further, the Examiner appears to allege on page 4 of the Office Action that Banerji's data history constitutes the "compression history" recited in claim 1. Applicant disagrees for at least the reasons that Banerji's data history is used for compressing motion vectors of the file

[2] See footnote 1 above.

containing the data history at the beginning of the file, not the subsequent file (nor the compression of a "subsequent packet.")

Moreover, Banerji's data history merely constitutes information regarding the resemblance of similar regions between a current frame and a previous frame of a video sequence rather than any information associated with compression. Therefore, Banerji's data history cannot possibly constitute the "compression history" recited in claim 1.

Furthermore, the Examiner acknowledges on page 5 of the Office Action that Jonsson and Banerji fail to disclose or suggest updating a compression history based on the first algorithm and the second algorithm recited in claim 1. To cure this deficiency of Jonsson and Banerji, the Examiner relies on McBride.

In contrast, McBride describes a transmitter transmitting compressed frames to a receiver. The transmitted frames may or may not be compressed. The transmitter maintains a first count of the number of frames that are transmitted. Every time a frame is transmitted, the first count increases. The receiver receives the transmitted frames, and maintains a second count of the number of frames that are received. Every time a frame is received, the second count increases. If on receiving a frame, the first count is equal to the second count, it is determined whether the transmitted frame was compressed. If the transmitted frame was compressed, the received frame is decompressed according to a decompression algorithm. If the first count is not equal to the second count, the compressed received frame is not decompressed as the decompression algorithm will fail, if used to decompress the compressed received frame. See McBride at column 4, lines 21-27, FIG. 2 and associated text.

The Examiner appears to allege on page 5 of the Office Action that McBride's increase of the first count and increase of the second count constitutes update of the compression history,

as recited in claim 1. Applicant disagrees for at least the reason that McBride's first count and second count are merely used to ensure that the transmitter and the receiver are aligned such that right compressed frame is decompressed at the receiver. McBride's first count and second count are clearly used to determine if the *decompression* of a frame can be performed, instead of using the first count and the second count for "*compression* of another payload of a subsequent packet," as recited in claim 1. Because McBride's decision to decompress is completely independent of the first count and the second count, McBride's first count and second count cannot relate to a compression history, much less "the compression history used for the compression of another payload of a subsequent packet," as recited in claim 1.

The Examiner acknowledges on page 5 of the Office Action that Jonsson, Banerji and McBride fails to disclose the following feature of claim 1: "selectively updating a compression history ... the compression history used for compression of another payload of a subsequent packet." To cure this deficiency of Jonsson, Banerji, and McBride, the Examiner relies on Dorward. Although Doward describes a history vector of previous packets, a mere collection of previous packets cannot possibly constitute a "compression history."[3] Therefore, Doward's fails to disclose or suggest "selectively updating a compression history ... the compression history used for compression of another payload of a subsequent packet," as recited in claim 1.

In view of the above-noted points, claim 1 is allowable over Jonsson, Banerji, McBride and Dorward, whether taken individually or in combination, and the rejection under 35 U.S.C. §103(a) of claim 1, as well as claims 2-5, at least by reason of their dependency, should be withdrawn.

Independent claims 6, 11, 15, 19, 22, 23, 24, 25, and 26, include features similar to those

[3] See footnote 1 above.

noted above with respect to claim 1. For at least the reasons noted above with respect to claim 1, independent claims 6, 11, 15, 19, 22, 23, 24, 25, and 26 as well as claims 7-10, 12-14, 16-18, 20, and 21, at least by reason of their dependency from their independent claims, are allowable over Jonsson, Banerji, McBride and Dorward, whether these references are taken individually or in combination, and the rejection of those claims under 35 U.S.C. §103(a) should be withdrawn.

Regarding the motivation to combine, the Examiner's modifications to Jonsson, Banerji, McBride, and Dorward fundamentally change the principal of operation of those references. For example, the Examiner reconstruction of Jonsson fundamentally changes the header compression protocol of Jonsson. Likewise, Banerji discloses compression of motion data information. The motion data is split and then compressed. On the other hand, McBride discloses receiving frames which may or may not be compressed. Since Banerji's files are always compressed whereas McBride's frames are not always compressed, the Examiner has fundamentally changed the principle of operations of Banerji and McBride. The Examiner's modifications of Jonsson, Banerji, McBride and Dorward thus clearly run afoul of M.P.E.P 2143.03 which states "[i]f the proposed modification or combination of the prior art would change the principle of operation of the prior art invention being modified, then the teachings of the references are not sufficient to render the claims prima facie obvious. *In re Ratti*, 270 F.2d 810, 123 USPQ 349 (CCPA 1959)." Therefore, the rejection under 35 U.S.C. § 103(a) of the instant claims should be withdrawn for this additional reason.

CONCLUSION

On the basis of the foregoing amendments, the pending claims are in condition for allowance. It is believed that all of the pending claims have been addressed in this paper. However, failure to address a specific rejection, issue or comment, does not signify agreement with or concession of that rejection, issue or comment. In addition, because the arguments made above are not intended to be exhaustive, there may be reasons for patentability of any or all pending claims (or other claims) that have not been expressed. Finally, nothing in this paper should be construed as an intent to concede any issue with regard to any claim, except as specifically stated in this paper.

Applicant is concurrently filing herewith a Request for Continued Examination with the requisite fee, authorization for a credit card payment of the filing fee is submitted herewith. No additional fees are believed to be due, however the Commissioner is authorized to charge any additional fees or credit overpayments to Deposit Account No. 50-0311, reference No. 39700-783001US/NC37129US. If there are any questions regarding this reply, the Examiner is encouraged to contact the undersigned at the telephone number provided below.

Respectfully submitted,

Date: 08 September 2010

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